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TITLE: INFORMATION TERMINAL AND TRANSMISSION CONTROL METHOD
FOR CODED DATA OF THE INFORMATION TERMINAL

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ABSTRACT:

PROBLEM TO BE SOLVED: To provide an information terminal that can reproduce video image or the video image and audio data through transmission reception of coded data at an optimum transfer rate at all times and through decoding processing in real time, without the need for specifying a communication channel and transmitter side and receiver side terminals and to provide a coded data transmission control method for the information terminal.

SOLUTION: A coding condition acquisition recognition section 13a identifies and acquires coding conditions from data received by a transmission reception section 11 and gives the coding conditions to a data transmission control section 13b. The data transmission control section 13b controls the operation of a coding processing section (encoder) 12 in accordance with the coding condition received from the coding condition acquisition recognition section 13a to

control an output of coded data, in matching with a state of a processing load of a connected channel and a receiver side information terminal 20.

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Notes:

1. Untranslatable words are replaced with asterisks (****).
2. Texts in the figures are not translated and shown as it is.

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FULL CONTENTS

[Claim(s)]

[Claim 1] A means to transmit the data for acquiring coding conditions from said partner terminal in the information terminal which transmits the encoded image data to a partner terminal through a communication line, The information terminal which possesses a means to acquire coding conditions from the partner terminal which received said data, and a means to control the transmitting output of image data according to said acquired coding conditions, and is characterized by things.

[Claim 2] The image data encoded through the communication line from the partner terminal of the transmitting side is received. The information terminal which has a means to generate the coding conditions which suit real-time reproduction when the data for checking a transfer rate from the terminal of said transmitting side is received in an information terminal with the function which decrypts and carries out real-time reproduction, and to notify to the terminal of said transmitting side, and is characterized by things.

[Claim 3] The image data encoded through the communication line from the partner terminal of the transmitting side is received. In an information terminal with the function which decrypts and carries out real-time reproduction, the loading state in the end of a local is recognized during reception of said image data. The information terminal which has a means to notify the coding conditions which suit the loading state concerned when it is in the loading state which does not suit real-time reproduction of image data to the terminal of said receiving side, and is characterized by things.

[Claim 4] A means to transmit the data for acquiring coding conditions to a partner terminal through a communication line in advance of the transmitting start of coded-image data, A means to recognize the transfer rate on a communication line based on the data received from the partner terminal, to generate the coding conditions which suit the real-time reproduction at the time of the image data reception accompanied by decoding processing based on the

transfer rate concerned, and to transmit to a partner terminal, When it is in the means which carries out the transmitting output control of the encoded image data, and the loading state which recognizes the loading state in the end of a local when having received image data, and does not suit real-time reproduction of image data according to the coding conditions received from the partner terminal, The information terminal which possesses a means to notify the coding conditions which suit the loading state concerned to a partner terminal, and is characterized by things.

[Claim 5] The information terminal according to claim 1, 2, 3, or 4 with which one information of a transfer rate, a frame rate, and a screen size is included in coding conditions at least.

[Claim 6] The image data encoded from the information terminal of the transmitting side through the communication line is transmitted. When decrypting said image data at the information terminal of a receiving side and carrying out real-time reproduction Data for a transmitting-side information terminal to acquire coding conditions on the occasion of the transmitting start of image data is transmitted to a receiving-side information terminal. A receiving-side information terminal recognizes the transfer rate on a communication line based on said received data. Generate the coding conditions which suit the real-time reproduction at the time of the image data reception accompanied by decoding processing based on the transfer rate concerned, and it transmits to a transmitting-side information terminal.

Furthermore, when it is in the loading state which recognizes the loading state in the end of a local at the time of subsequent image data reception, and does not suit real-time reproduction of image data, The coded data transmission control method of the information terminal characterized by carrying out the transmitting output control of the image data according to the coding conditions concerned whenever it generates the coding conditions which suit the loading state concerned, it transmits to a transmitting-side information terminal and a transmitting-side information terminal receives said coding conditions.

[Claim 7] The information terminal of a transmitting side transmits the data which encoded an image and voice to the information terminal of the receiving side by which the line connection was carried out. When decrypting the data which the information terminal of the receiving side received on real time The coded data transmission control method of the information terminal characterized by for both the information terminals by which the line connection was carried out recognizing dynamically the conditions which can decrypt data on real time based on the transfer rate of the connected circuit, and sending and receiving data based on the condition.

[Claim 8] When decrypting the data which transmitted the data with which the information terminal of the transmitting side encoded an image and voice to the information terminal of the receiving side by which the line connection was carried out, and the information terminal of the receiving side received on real time, the information terminal of a receiving side [with an internal load effect] It is judged whether the data encoded on the present coding conditions

can be decrypted on real time. By notifying the coding conditions which can be decrypted on real time to the information terminal of a transmitting side, when the state where it cannot decrypt on real time has been recognized The coded data transmission control method of the information terminal characterized by encoding the data which the information terminal of a transmitting side recognizes the optimal coding conditions dynamically, and transmits according to the coding conditions concerned.

[Claim 9] The information terminal of a transmitting side transmits the data which encoded an image and voice to the information terminal of the receiving side by which the line connection was carried out. When decrypting the data which the information terminal of the receiving side received on real time When the information terminal of a receiving side recognizes dynamically the conditions which can be decrypted on real time corresponding to the screen size concerned to change at the time of the change request of a screen size and notifies to the information terminal of a transmitting side The coded data transmission control method of the information terminal characterized by encoding the data which the information terminal of a transmitting side recognizes the optimal coding conditions dynamically, and transmits according to the coding conditions concerned.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the information terminal which transmits the encoded image data to a partner terminal through a communication line.

[0002] Moreover, this invention relates to an information terminal with the function which receives and decrypts the image data encoded through the communication line from the partner terminal of the transmitting side, and carries out real-time reproduction.

[0003] Moreover, this invention transmits the data with which the terminal of the transmitting side encoded an image or an image, and voice to the terminal of a receiving side through a communication line, and relates to the information terminal applied to the system by which the terminal of a receiving side decrypts the data received from the terminal of the transmitting side on real time.

[0004] Moreover, this invention encodes the data which becomes with an image or an image, and voice, and relates to the coded data transmission control method of the information terminal equipped with the function which sends and receives the coded data concerned, for example through arbitrary circuits which can be communicated, such as a cellular-phone circuit, a dial-up line, and a network line, and an information terminal.

[0005]

[Description of the Prior Art] In the information-interchange system using an information terminal etc., when treating an image and voice data, it is considered as the method of making data size small, with the data quality of a basis maintained, and there is coding/decoding technology. There is an encoder as equipment which encodes and there is a decoder as equipment which decrypts. An encoder can be encoded with various transfer rates (bps), a frame rate (fps), a screen size, etc. A user is this system, when performing real-time reproduction (real-time coding / decoding processing) in the state where it connected with the telephone line, needs to get to know the line connection point and a circuit state, and needs to encode with the transfer rate which suited it. Moreover, it is necessary to encode by recognizing and taking into consideration the capacity of the decoder which decodes the encoded data. Under the present circumstances, when a transmitting side (encoder side) encodes above the transfer rate which a circuit has, since the encoded data is larger than the transfer rate which a circuit has, a receiving side (decoder side) cannot be decrypted on real time. Moreover, when it encodes below with the transfer rate of a circuit and encodes above the capacity (the frame rate, screen size which can be processed on real time) of a decoder, a decoding on real time cannot be performed.

[0006] As described above, in the former, carry an encoder (encoder) in the information terminal of a transmitting side at least, and a decoder (decoder) is carried in the information terminal of a receiving side. When transmitting coded data to the information terminal of the receiving side by which the line connection was carried out, it is necessary to encode with the transfer rate which suited the line connection point and a circuit state. Moreover, each device of the usable (it is connectable) circuit and the transmitting side, and the receiving side was specified, respectively, therefore it was lacking in versatility, and there was a problem from it being necessary to encode in consideration of the capacity of the decoder which decodes the encoded data in respect of user-friendliness. In the easy information terminal of carrying, the demand was not able to be met in particular to ***** coded data and carry out real-time reproduction between the arbitrary points, using arbitrary circuits.

[0007]

[Problem to be solved by the invention] As mentioned above, the terminal of a transmitting side transmits the data which encoded an image or an image, and voice to the terminal of a receiving side through a communication line. The terminal of a receiving side the data received from the terminal of the transmitting side in the system to decrypt on real time [the former] When transmitting coded data to the terminal of the receiving side by which the line connection was carried out, it is necessary to encode with the transfer rate which suited the line connection point and a circuit state. Moreover, each device of the usable (it is connectable) circuit and the transmitting side, and the receiving side was specified, respectively, therefore it was lacking in versatility, and there was a problem from it being necessary to encode in

consideration of the capacity of the decoder which decodes the encoded data in respect of user-friendliness. In the easy information terminal of carrying, the demand was not able to be met in particular to ***** coded data and carry out real-time reproduction between the arbitrary points, using arbitrary circuits.

[0008] This invention was made in view of the above-mentioned actual condition, and transmits the data with which the terminal of the transmitting side encoded an image or an image, and voice to the terminal of a receiving side through a communication line. When the terminal of a receiving side decrypts the data received from the terminal of the transmitting side on real time It aims at offering the coded data transmission control method of the information terminal which can perform reproduction of the image or image by the decoding processing in ***** and real time of coded data, and voice with the always optimal transfer rate, and an information terminal, without specifying the terminal of a communication line, a transmitting side, and a receiving side.

[0009] Moreover, the cellular-phone circuit which differs in a transfer rate in an information terminal with this invention easy to carry, It aims at offering the coded data transmission control method of the information terminal which ***** coded data with the always optimal transfer rate, and can carry out real-time reproduction between the arbitrary points using arbitrary circuits which can be communicated, such as a dial-up line and a network line, and an information terminal.

[0010]

[Means for solving problem] This invention transmits the data with which the terminal of the transmitting side encoded an image or an image, and voice to the terminal of a receiving side. When the terminal of a receiving side decrypts the data received from the terminal of the transmitting side on real time The terminal of a receiving side recognizes dynamically coding conditions (a transfer rate, a frame rate, a screen size, etc.) based on the transfer rate of the connected circuit, notifies to the terminal of a transmitting side, and the terminal of a transmitting side is characterized by encoding on the optimal coding conditions.

[0011] Namely, a means to transmit data for this invention to acquire coding conditions (a transfer rate, a frame rate, a screen size, etc.) from said partner terminal in the information terminal which transmits the encoded image data to a partner terminal through a communication line, A means to acquire coding conditions from the partner terminal which received said data, and a means to control the transmitting output of image data according to said acquired coding conditions are provided, and it is characterized by things.

[0012] Moreover, this invention receives the image data encoded through the communication line from the partner terminal of the transmitting side. In an information terminal with the function which decrypts and carries out real-time reproduction, when the data for checking a transfer rate from the terminal of said transmitting side is received, it has a means to generate

reception
time

the coding conditions which suit real-time reproduction, and to notify to the terminal of said transmitting side, and is characterized by things.

[0013] Moreover, this invention receives the image data encoded through the communication line from the partner terminal of the transmitting side. In an information terminal with the function which decrypts and carries out real-time reproduction, the loading state in the end of a local is recognized during reception of said image data. When it is in the loading state which does not suit real-time reproduction of image data, it has a means to notify the coding conditions which suit the loading state concerned to the terminal of said receiving side, and is characterized by things.

[0014] Moreover, this invention transmits the data with which the terminal of the transmitting side encoded an image or an image, and voice to the terminal of a receiving side through a communication line. In the information terminal applied to the system by which the terminal of a receiving side decrypts the data received from the terminal of the transmitting side on real time A means to transmit the data for acquiring coding conditions to a partner terminal through a communication line in advance of the transmitting start of coded-image data, A means to recognize the transfer rate on a communication line based on the data received from the partner terminal, to generate the coding conditions which suit the real-time reproduction at the time of the image data reception accompanied by decoding processing based on the transfer rate concerned, and to transmit to a partner terminal, When it is in the means which carries out the transmitting output control of the encoded image data, and the loading state which recognizes the loading state in the end of a local when having received image data, and does not suit real-time reproduction of image data according to the coding conditions received from the partner terminal, A means to notify the coding conditions which suit the loading state concerned to a partner terminal is provided, and it is characterized by things.

[0015] Moreover, this invention transmits the image data encoded from the information terminal of the transmitting side through the communication line. In the coded data transmission control method at the time of decrypting said image data at the information terminal of a receiving side, and carrying out real-time reproduction Data for a transmitting-side information terminal to acquire coding conditions on the occasion of the transmitting start of image data is transmitted to a receiving-side information terminal. A receiving-side information terminal recognizes the transfer rate on a communication line based on said received data. Generate the coding conditions which suit the real-time reproduction at the time of the image data reception accompanied by decoding processing based on the transfer rate concerned, and it transmits to a transmitting-side information terminal. Furthermore, when it is in the loading state which recognizes the loading state in the end of a local at the time of subsequent image data reception, and does not suit real-time reproduction of image data, Whenever it generates the coding conditions which suit the loading state concerned, it transmits to a

transmitting-side information terminal and a transmitting-side information terminal receives said coding conditions, it is characterized by carrying out the transmitting output control of the image data according to the coding conditions concerned.

[0016] Moreover, this invention is set to both the information terminals connected to the circuit of a cellular-phone circuit, a dial-up line, a network line, etc. which can be communicated, for example. In the coded data transmission control method at the time of ***** (ing) the data which encoded an image or an image, and voice Both the information terminals by which the line connection was carried out recognize dynamically the conditions which can decrypt data on real time based on the transfer rate of the connected circuit, and it is characterized by sending and receiving data based on the condition.

[0017] Moreover, this invention is set to both the information terminals connected to the circuit of a cellular-phone circuit, a dial-up line, a network line, etc. which can be communicated, for example. The information terminal of a receiving side in the coded data transmission control method at the time of ***** (ing) the data which encoded an image or an image, and voice [with an internal load effect] It is judged whether the data encoded on the present coding conditions can be decrypted on real time. When the state where it cannot decrypt on real time has been recognized, by notifying the coding conditions which can be decrypted on real time to the information terminal of a transmitting side, the information terminal of a transmitting side recognizes the optimal coding conditions dynamically, and is characterized by encoding the data transmitted according to the coding conditions concerned.

[0018] Moreover, this invention is set to both the information terminals connected to the circuit of a cellular-phone circuit, a dial-up line, a network line, etc. which can be communicated, for example. In the coded data transmission control method at the time of ***** (ing) the data which encoded an image or an image, and voice When the information terminal of a receiving side recognizes dynamically the conditions which can be decrypted on real time corresponding to the screen size concerned to change at the time of the change request of a screen size and notifies to the information terminal of a transmitting side The information terminal of a transmitting side recognizes the optimal coding conditions dynamically, and is characterized by encoding the data transmitted according to the coding conditions concerned.

[0019] By having the coding control function which was described above, the terminal of a transmitting side transmits the data which encoded an image or an image, and voice to the terminal of a receiving side through a communication line. ***** of coded data and real-time reproduction can be performed with the always optimal transfer rate, without specifying the terminal of a communication line, a transmitting side, and a receiving side, when the terminal of a receiving side decrypts the data received from the terminal of the transmitting side on real time. In particular, a cellular-phone circuit, a dial-up line, a network line, etc. which differ in a transfer rate in the easy information terminal of carrying can transmit coded data with the

always optimal transfer rate between the arbitrary points using the arbitrary circuits which can be communicated, and can carry out real-time reproduction in a receiving side.

[0020]

[Mode for carrying out the invention] With reference to Drawings, the embodiment of this invention is explained below.

[0021] Drawing 1 is the composition of the important section of the information terminal in the embodiment of this invention a shown block diagram, and [here] In both the information terminals by which the line connection was carried out, it has composition which was equipped with the encoder which encodes data only to the information terminal of one of these, and transmits to it, and was equipped with the decoder which receives and decrypts coded data only to the information terminal of another side.

[0022] Ten are an information terminal of the transmitting side equipped with the encoder which transmits the encoded data to a partner terminal through a communication line among a figure, and 20 is the information terminal of the receiving side equipped with the decoder which receives the above-mentioned coded data and is decrypted on real time. 30 is each above-mentioned information terminal 10 and a channel which carries out the line connection of between both 20.

[0023] 11, or 13a and 13b make the component of the transmitting-side information terminal 10, respectively, and they are the coding processing section (encoder), the coding condition acquisition recognition part which transmission-and-reception **** realizes 11, and 12 is realized by 13a, and is realized by the processor 13 inside a terminal, respectively as for 13b, and a data forwarding control section.

[0024] Above-mentioned transmission-and-reception **** 11 receives coding condition information from the receiving-side information terminal 20 while transmitting the data encoded by the coding processing section (encoder) 12 here to the receiving-side information terminal 20 by which the line connection was carried out.

[0025] The coding processing section (encoder) 12 encodes the image data (it is considered as the image and voice data which becomes with an image and voice here) which should be transmitted under control of the data forwarding control section 13b, and sends out the coded data concerned to transmission-and-reception **** 11.

[0026] The coding condition acquisition recognition part 13a identifies and acquires coding conditions from the data received by transmission-and-reception **** 11, and passes the coding condition to the data forwarding control section 13b. The data forwarding control section 13b carries out motion control of the coding processing section (encoder) 12 according to the coding conditions received from the coding condition acquisition recognition part 13a, and performs the output control of the coded data (the encoded image and voice data) which suited the processing loading state of the connection circuit and the receiving-side information.

terminal 20.

[0027] 21, or 23a and 23b make the component of the receiving-side information terminal 20, respectively, and they are the decoding processing section (decoder), the coding condition generation section which transmission-and-reception **** realizes 21, and 22 is realized by 23a, and is realized by the processor 23 inside a terminal, respectively as for 23b, and the coding condition sending-out section.

[0028] From the transmitting-side information terminal 10 by which the line connection was carried out here, above-mentioned transmission-and-reception **** 21 transmits the coding conditions outputted from the coding condition sending-out section 23b to the transmitting-side information terminal 10 by which the line connection was carried out while receiving the encoded image and voice data.

[0029] The decoding processing section (decoder) 22 carries out decoding processing of the coding image and the voice data received by above-mentioned transmission-and-reception **** 21 on real time, and carries out a reproducing output to the display output section, the voice output section, etc. which are not illustrated.

[0030] The coding condition generation section 23a has the coding condition managed table (TBL) which stored two or more sorts of coding conditions which become by the data structure mentioned later, and the transfer rate of a circuit is computed based on the data received by transmission-and-reception **** 21. The above-mentioned coding condition managed table (TBL) is referred to based on the transfer rate concerned. the processing facility which generates the coding conditions which can carry out decoding processing to real time -- and When it judges whether decoding processing can be carried out to real time on the present coding conditions in connection with the internal load effect by interrupt processing etc. and decoding processing cannot be carried out to real time, the above-mentioned coding condition managed table (TBL) is referred to. It has the processing facility which generates the coding conditions which can carry out decoding processing to real time, and the generated coding conditions are passed to the coding condition sending-out section 23b. The coding condition sending-out section 23b sends out the coding conditions received from the coding condition generation section 23a to the transmitting-side information terminal 10 by which the line connection was carried out through transmission-and-reception **** 21.

[0031] The above-mentioned coding conditions presuppose a part [, or] here. [a transfer rate, a frame rate, and a screen size] Moreover, a channel 30 targets various kinds of communication lines, such as a cellular-phone circuit in which a line connection is possible, a dial-up line, and a network line, at the transmitting-side information terminal 10 and the receiving-side information terminal 20.

[0032] Drawing 2 and drawing 3 are flow charts which show the proper coding procedure of the image and voice data performed at the transmitting-side information terminal 10 by which the

line connection was carried out and the receiving-side information terminal 20 in the above-mentioned embodiment, respectively. The flow chart which shows the setting processing procedure of coding conditions in which drawing 2 is performed in advance of a transfer of an image and voice data, and drawing 3 are flow charts which show the dynamic change processing procedure of coding conditions. In drawing 2 and drawing 3, each processing of Steps A12-A14 and Steps A22-A24 is performed by the coding condition acquisition recognition part 13a. Each processing of Step A15, A11, and Step A21 is performed by the data forwarding control section 13b. Each processing of Step B11, B12 and Step B21, B22, B24, and B25 is performed by the coding condition generation section 23a, and each processing of Step B13 and Step B23 is performed by the coding condition sending-out section 23b.

[0033] Here explains operation in the embodiment of this invention with reference to each above-mentioned figure.

[0034] When the transmitting-side information terminal 10 transmits the image and voice data obtained, for example from devices, such as a video camera and a microphone, to the receiving-side information terminal 20 via a circuit, The data for a transfer rate check for checking the transfer rate of the circuit connected to the receiving-side information terminal 20 used as a communications partner is transmitted (drawing 2 step A11).

[0035] The receiving-side information terminal 20 asks for the transfer rate of the circuits (a cellular-phone circuit, the telephone line, a network line, etc.) 30 connected now from the received data. Here, it asks for the transfer rate of a circuit from the time concerning the size of the received data, and a transfer (the drawing 2 step B11, B12).

[0036] Next, the receiving-side information terminal 20 is the range which does not exceed the transfer rate of the connected circuit 30 with reference to a coding condition managed table (TBL). The transfer rate for encoding an image and voice data is chosen, and the frame rate and screen size which can be processed are determined as real time in the decoding processing section (decoder) 22 from the transfer rate which performs the coding further. Here, all the patterns (put together) that can be decrypted are chosen and acquired on real time. The coding conditions which can be decrypted on the real time obtained here are transmitted to the transmitting-side information terminal 10 by which the line connection was carried out (drawing 2 step B13).

[0037] [the transmitting-side information terminal 10] if the coding conditions which can be decrypted on real time from the receiving-side information terminal 20 are received When all those conditions are displayed on the display screen, a user is shown and a user chooses one condition on the display screen, the coding conditions of the coding processing section (encoder) 12 are set up (drawing 2 steps A12-A14). Setting processing of such coding conditions is performed at the interval (for example, 10-second interval) set up beforehand,

and the state (transfer rate) of a channel 30 is checked each time (the drawing 2 step A15, A11-A1, B11, --). However, when a circuit rate does not change between the above-mentioned intervals here, coding conditions are not generated from the receiving-side information terminal 20 (not transmitted), therefore processing of a state check of a channel 30 is not performed.

[0038] If setting processing of the above-mentioned coding conditions is performed and the coding conditions of the coding processing section (encoder) 12 in the transmitting-side information terminal 10 are determined According to the coding condition, the coding processing section (encoder) 12 encodes and the image and voice data which should be transmitted are transmitted to the receiving-side information terminal 20 by which the line connection was carried out (drawing 3 step A21).

[0039] [the receiving-side information terminal 20] if the coding image and voice data transmitted from the transmitting-side information terminal 10 are received When it judges whether the coded data by which the internal processing loading state was received can be decrypted on real time and judges that there is no change in an internal processing loading state, and it can decrypt on real time Decoding processing of the coded data concerned is carried out on real time by the decoding processing section (decoder) 22 (drawing 3 steps B21-B25):

[0040] When it becomes below the transfer rate that the transfer rate of the channel 30 by which the line connection was carried out changes, and has been encoded between the set-up intervals in the receiving-side information terminal 20 here now Again, with reference to a coding condition managed table (TBL), the conditions in which decoding processing is possible are elected on real time, and the coding conditions concerned are transmitted to the transmitting-side information terminal 10 through a channel 30 (the drawing 3 step B22, B23). In order to prevent the extreme change at the time of a decoding, let the coding conditions transmitted here be the things nearest to the last conditions.

[0041] Thus, since the conditions (a transfer rate, a frame rate, screen size) to encode are dynamically set as the optimal value at a certain interval, even if the circuit rate of the connected circuit changes, a decoding on real time is always attained.

[0042] Moreover, also when it becomes impossible to process the data which the internal processing load (CPU load) improved by generating of interruption etc., and was encoded on the present coding conditions in the receiving-side information terminal 20 on real time Without waiting for the data transmission by the interval of the above-mentioned transmitting-side information terminal 10, with reference to a coding condition managed table (TBL), the optimal coding conditions according to the present processing loading state are elected, and it transmits to the transmitting-side information terminal 10 (the drawing 3 step B22, B23).

[0043] The transmitting-side information terminal 10 encodes the image and voice data which should be transmitted on the coding conditions received from the receiving-side information

terminal 20, and transmits to the receiving-side information terminal 20 (the drawing 3 steps A22-A24, A21).

[0044] Thus, [a load] also when the processing load of the interior in the receiving-side information terminal 20 goes up, for example by interruption etc. Since the conditions (a transfer rate, a frame rate, screen size) to encode are dynamically set as the optimal value according to the load effect, a decoding on real time is always attained.

[0045] Moreover, also when the processing load (CPU load) of the interior in the receiving-side information terminal 20 falls, the present coding conditions can be changed to the optimal value, and it becomes possible to encode on the coding conditions that a frame rate is larger.

[0046] Moreover, also when a screen size is changed, the present coding conditions can be changed to the optimal value like the above. In this case, the optimal coding conditions are elected with reference to a coding condition managed table (TBL) by setting receiving-side information terminal 20 and advancing the change request of the present screen size. This coding condition is transmitted to the transmitting-side information terminal 10 like the above. The transmitting-side information terminal 10 is ** which encodes the image and voice data which should be transmitted according to the coding conditions concerned, when the above-mentioned coding conditions are received. Thus, there is a change request of a screen size at the receiving-side information terminal 20, and even if it is the case where a screen size is changed to meet the demand, an image and voice data can be decrypted on real time according to the coding conditions which suited the screen size.

[0047] Here, operation in the above-mentioned embodiment is explained more concretely.

[0048] First, the line connection of the transmitting-side information terminal 10 and the receiving-side information terminal 20 is carried out through a channel 30.

[0049] The transmitting-side information terminal 10 transmits the data which checks the transfer rate of a channel 30 to the receiving-side information terminal 20 after the above-mentioned line connection (drawing 2 step A11).

[0050] The receiving-side information terminal 20 asks for the transfer rate of the present channel 30 by the size and time of the received data (the drawing 2 step B11, B12).

[0051] Here, suppose that the computed transfer rate was 33k bps.

[0052] The receiving-side information terminal 20 acquires all the conditions that can carry out real-time processing in the decoding processing section (decoder) 22 in case a transfer rate is 33k bps with reference to a coding condition managed table (TBL) from this computed transfer rate. Here, three sorts, "33/3-/QCIF", "33/2-/QCIF", and "33/1-/QCIF", shall have "a transfer rate / frame rate / screen size."

[0053] All of three sorts of these selected coding conditions are transmitted to the transmitting-side information terminal 10 (drawing 2 step B13).

[0054] [the transmitting-side information terminal 10] if the three above-mentioned sorts of

coding conditions are received from the receiving-side information terminal 20. These coding conditions are displayed on a display, a user is shown, and a user is made to choose one sort of coding conditions for decrypting on real time from the three above-mentioned sorts of coding conditions (drawing 2 steps A12-A14). Here, "33/3-/QCIF" is chosen, for example as "a transfer rate / frame rate / a screen size."

[0055] According to this selected coding condition, the coding processing section (encoder) 12 of the transmitting-side information terminal 10 encodes the image and voice data which should be transmitted one by one. This encoded image and voice data are transmitted to the receiving-side information terminal 20 by transmission-and-reception **** 11 (drawing 3 step A21).

[0056] Then, if it becomes the set-up interval (for example, voice packet 10 seconds, and a setup), data transmission for checking again a transfer rate which was described above will be performed (the drawing 2 step A15, A11).

[0057] Here, the transfer rate of the channel 30 should change, for example to 30kb. Thus, when the transfer rate of a channel 30 changes, [the receiving-side information terminal 20] With reference to a coding condition managed table (TBL), the coding conditions which can be decrypted on real time are acquired again, and all the acquired coding conditions concerned are transmitted to the transmitting-side information terminal 10 (drawing 2 steps B11-B13).

[0058] Here, "28/5", "28/4", "28/3", "28/2", and "28/1" shall have five sorts of "a transfer rate / frame rates" as conditions which can carry out decoding processing of the decoding processing section (decoder) 22 to real time. Under the present circumstances, in order to prevent an extreme change of a screen, the nearest thing is chosen with reference to a coding condition managed table (TBL), and it transmits to the transmitting-side information terminal 10. Here, "28/4" is chosen as "a transfer rate/a frame rate", and it transmits to the transmitting-side information terminal 10.

[0059] The transmitting-side information terminal 10 will encode the image and voice data which should be transmitted according to the coding conditions concerned, if the coding conditions transmitted from the receiving-side information terminal 20 are received.

[0060] Moreover, when there is no change in a transfer rate at the time of transfer rate acquisition of the channel 30 at the time of the above-mentioned interval, generation processing of the coding conditions in the receiving-side information terminal 20 is not performed.

[0061] Thus, since the transfer rate of a channel 30 is checked by a certain unit time, the image and voice data which should be transmitted with the always optimal transfer rate are encoded, and it can always decrypt on real time in the receiving-side information terminal 20.

[0062] Next, the application in the embodiment of this invention is explained with reference to drawing 4 . In this drawing 4 , two or more receiving-side information terminals 20 by which the

line connection was carried out to the transmitting-side information terminal 10 exist. It is possible to perform coding processing on the dynamically optimal conditions like the embodiment it is indicated to drawing 1 that mentioned above also in this case. however, [exist / here / two or more receiving-side information terminals 20 by which a line connection is carried out to the transmitting-side information terminal 10] Coding conditions are set up with the decoding processing sections (decoder) 22 and 22 and the receiving-side information terminal 20 with the No. 1 throughput low at the time of an interval of -- which chooses in inside what has the lowest throughput of each receiving-side information terminals 20 and 20 and -- at the time of a setup of the first coding conditions. Thus, in order to encode according to the coding conditions for the decoding processing section (decoder) 22 of the lowest receiving-side information terminal 20 of a throughput, A decoding can do all the receiving-side information terminals 20 and 20 by which a line connection is carried out to the transmitting-side information terminal 10, and the image and voice data which should be transmitted on real time in --.

[0063] As described above, according to the embodiment of this invention, a cellular-phone circuit, a dial-up line, [the transmitting-side information terminal 10 and the receiving-side information terminal 20 by which the line connection was carried out through the channels 30, such as a network line,] [the transmitting-side information terminal 10 and the receiving-side information terminal 20 by which the line connection was carried out] when ***** (ing) the data which encoded an image or an image, and voice [having the function which recognizes dynamically the conditions which can decrypt data on real time based on the transfer rate of the connected circuit, and sends and receives data based on the condition] [according to the embodiment of this invention] moreover it ***** coded data with the always optimal transfer rate between the arbitrary points using the arbitrary circuits with which the transmitting-side information terminal 10 and the receiving-side information terminal 20 can communicate and can reproduce on real time [the transmitting-side information terminal 10 and the receiving-side information terminal 20 which were connected to the circuit of a cellular-phone circuit, a dial-up line, a network line, etc. which can be communicated] When ***** (ing) the data which encoded an image or an image, and voice, the receiving-side information terminal 20 [with an internal load effect (change of a CPU load)] When the state where it judges whether the data encoded on the present coding conditions can be decrypted on real time, and cannot decrypt on real time has been recognized [encoding the data which the transmitting-side information terminal 10 recognizes the optimal coding conditions dynamically, and transmits according to the coding conditions concerned by notifying the coding conditions which can be decrypted on real time to the transmitting-side information terminal 10] An image and voice data can be decrypted on real time according to the coding conditions according to the processing loading state of the receiving-side information terminal 20.

[0064] [moreover, the transmitting-side information terminal 10 and the receiving-side information terminal 20 which were connected to the circuit of a cellular-phone circuit, a dial-up line, a network line, etc. which can be communicated according to the embodiment of this invention] When ***** (ing) the data which encoded an image or an image, and voice and the receiving-side information terminal 20 requires change of a screen size, The conditions which can be decrypted on real time corresponding to the screen size concerned to change are recognized dynamically, by notifying the coding condition to the transmitting-side information terminal 10, coding conditions with optimal information terminal of a transmitting side can be recognized dynamically, and the data transmitted according to the coding conditions concerned can be encoded.

[0065] By having the coding control function which was described above, the transmitting-side information terminal 10 transmits the data which encoded an image or an image, and voice to the receiving-side information terminal 20 through a communication line. ***** of coded data and real-time reproduction can be performed with the always optimal transfer rate, without specifying each terminal by the side of the channel 30 by which a line connection is carried out, and a transmitter receipt, when the receiving-side information terminal 20 decrypts the data received from the transmitting-side information terminal 10 on real time. In particular, a cellular-phone circuit, a dial-up line, a network line, etc. which differ in a transfer rate in the easy information terminal of carrying can transmit coded data with the always optimal transfer rate between the arbitrary points using the arbitrary circuits which can be communicated, and can carry out real-time reproduction in a receiving side.

[0066] In addition, in the above-mentioned embodiment, in order to give explanation simple, it sets to the transmitting-side information terminal 10 and the receiving-side information terminal 20 by which the line connection was carried out. Although it has composition which was equipped with the encoder (coding processing section 12) which encodes data only to the transmitting-side information terminal 10, and transmits to it, and was equipped with the decoder (decoding processing section 22) which receives and decrypts coded data only to the receiving-side information terminal 20 You may be the composition of having prepared the encoder (coding processing section) which encodes data not only to this but to each terminal, and transmits to it, and the decoder (decoding processing section) which receives and decrypts coded data.

[0067]

[Effect of the Invention] As a full account was given above, according to this invention, the terminal of a transmitting side transmits the data which encoded an image or an image, and voice to the terminal of a receiving side through a communication line. When the terminal of a receiving side decrypts the data received from the terminal of the transmitting side on real time The coded data transmission control method of the information terminal which can perform

reproduction of the image or image by the decoding processing in ***** and real time of coded data, and voice with the always optimal transfer rate, and an information terminal can be offered without specifying the terminal of a communication line, a transmitting side, and a receiving side.

[0068] Moreover, the cellular-phone circuit which differs in a transfer rate in the easy information terminal of carrying according to this invention, The coded data transmission control method of the information terminal which ***** coded data with the always optimal transfer rate, and can carry out real-time reproduction between the arbitrary points using arbitrary circuits which can be communicated, such as a dial-up line and a network line, and an information terminal can be offered.

[Brief Description of the Drawings]

[Drawing 1] The block diagram showing the composition of the important section in the embodiment of this invention.

[Drawing 2] The flow chart which shows the procedure of the above-mentioned embodiment.

[Drawing 3] The flow chart which shows the procedure of the above-mentioned embodiment.

[Drawing 4] The block diagram showing the example of a system configuration for explaining the application in the above-mentioned embodiment.

[Explanations of letters or numerals]

10 -- Transmitting-side information terminal

11 -- Transceiver section

12 -- Coding processing section (encoder)

13 -- Processor

13a -- Coding condition acquisition recognition part

13b -- Data forwarding control section

20 -- Receiving-side information terminal

21 -- Transceiver section

22 -- Decoding processing section (decoder)

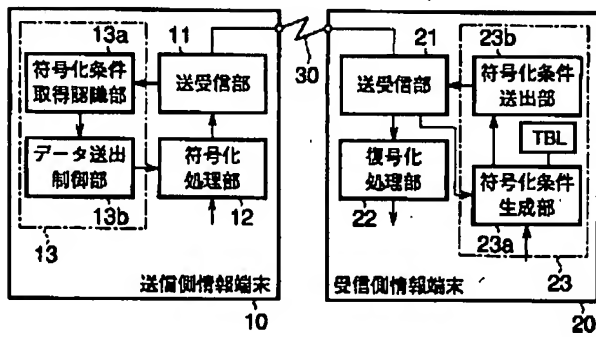
23 -- Processor

23a -- Coding condition generation section

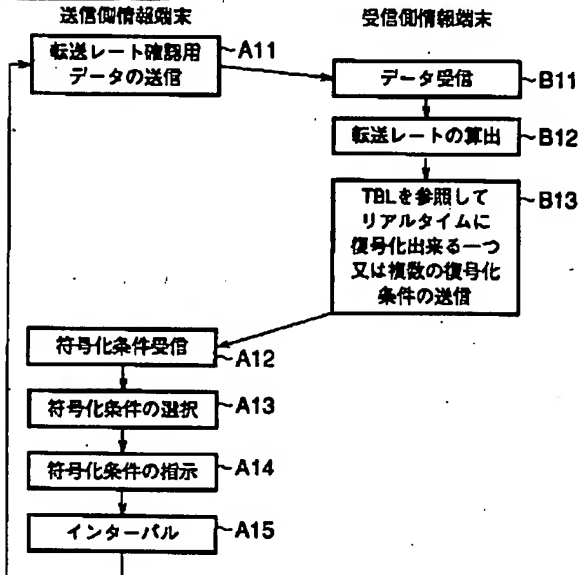
23b -- Coding condition sending-out section

30 -- Channel

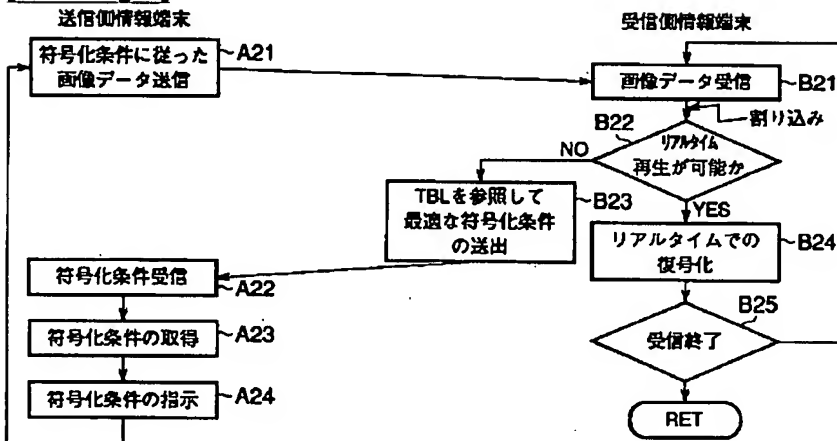
[Drawing 1]



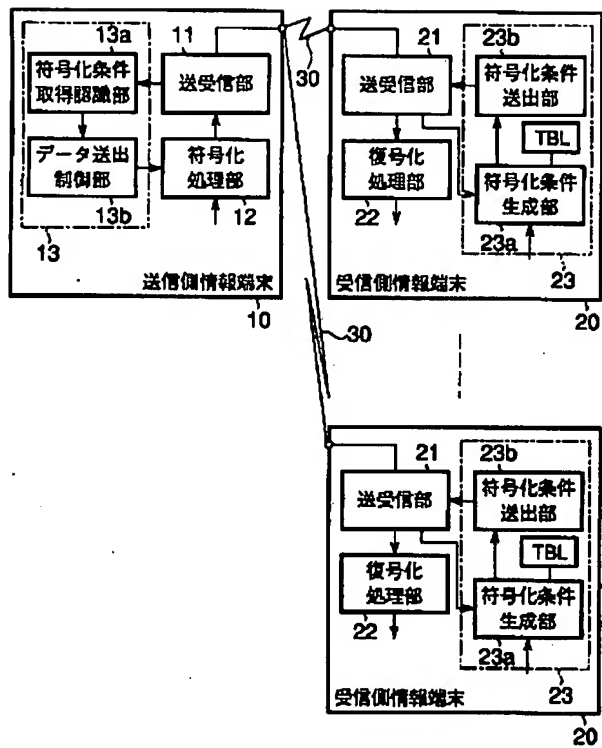
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]